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PATENT ABSTRACTS OF JAPAN(21) Application number: **11260816**(51) Intl. Cl.: **G01J 9/02**(22) Application date: **14.09.99**

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**(54) METHOD AND DEVICE
FOR MEASURING TIME
WAVEFORM OF OPTICAL
SIGNAL ELECTRIC FIELD**

(57) Abstract:

PROBLEM TO BE SOLVED: To maintain performance for a long term and execute measurement without selecting an installation environment by a method wherein intensity changes of spectrum components in mixed lights in accordance with changes of relative phases of locally emitted lights and measuring lights are compared with each other to measure the relative phase.

SOLUTION: One of measuring light signals 101 which are bisected by a split mirror 102 is incident and focused on a secondary non-linear medium 105, and locally emitted lights obtained by second higher harmonics reach a multiplexing mirror 111. Furthermore, the other of the measuring light signals 101 passes a reflector 109 mounting a

displacer 112 and further passes a reflection mirror 110 and reaches the multiplexing mirror 111 through an optical path of a changed optical length. The locally emitted lights and optical signals reached the multiplexing mirror 111 are multiplexed and made incident and focused on a secondary non-linear medium 113, so that mixed lights are emitted. These mixed lights are bisected by a split mirror 115, and spectrum components are respectively extracted by respective spectroscopes 116, 118, and are converted into electric signals by respective light detectors 117, 119 to observe simultaneously their intensities and compare with each other.

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